

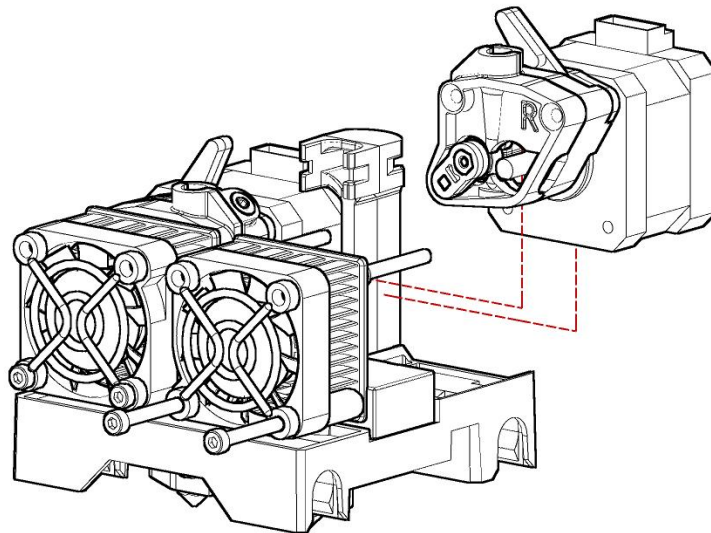
# How to Calibrate Nozzle Heights on a MakerBot Replicator 2X

These are instructions for adjusting the height of an extruder nozzle on a MakerBot Replicator 2X. You should follow these instructions only if you have determined that one of your two extruder nozzles is consistently farther from the build plate than the other. This process will require the use of the 2.5 mm hex wrench that came with your Replicator 2X and a leveling card or piece of paper.

1. Level your build plate relative to the lower nozzle.

Ignore the higher nozzle. The purpose of this step is to ensure that the nozzle closest to the platform is at the right height for printing.

2. Unload the filament from the extruder with the higher nozzle.
3. Remove the motor assembly from the extruder with the higher nozzle.



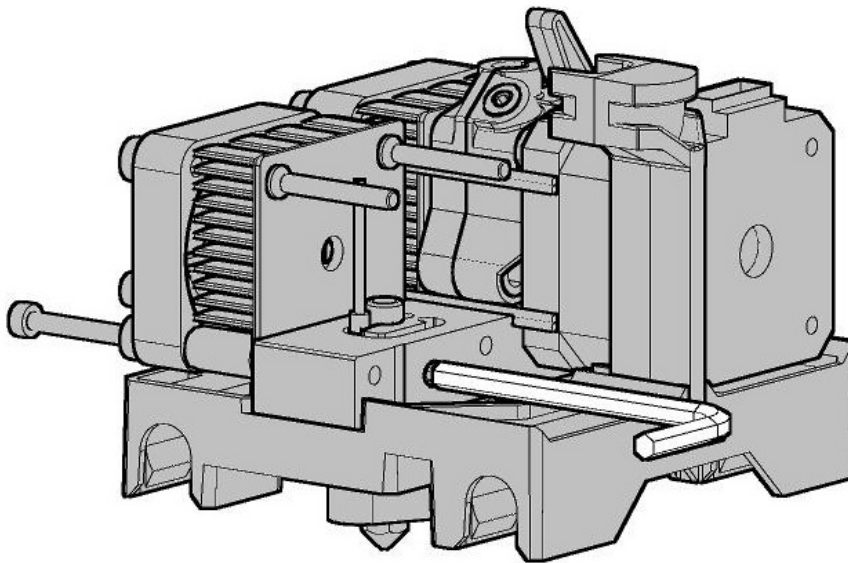
First detach the white plastic motor wire connector from the motor. Then use your 2.5 mm hex wrench to loosen the fan bolts at the front of the extruder until the motor is free. Remove the motor assembly and set it aside.

4. Use your hand to move the extruder to the front center of the Replicator 2X.
5. Ensure that the lower nozzle is at the correct height.

Slide your leveling card under both nozzles. If you don't have the MakerBot Support card, you

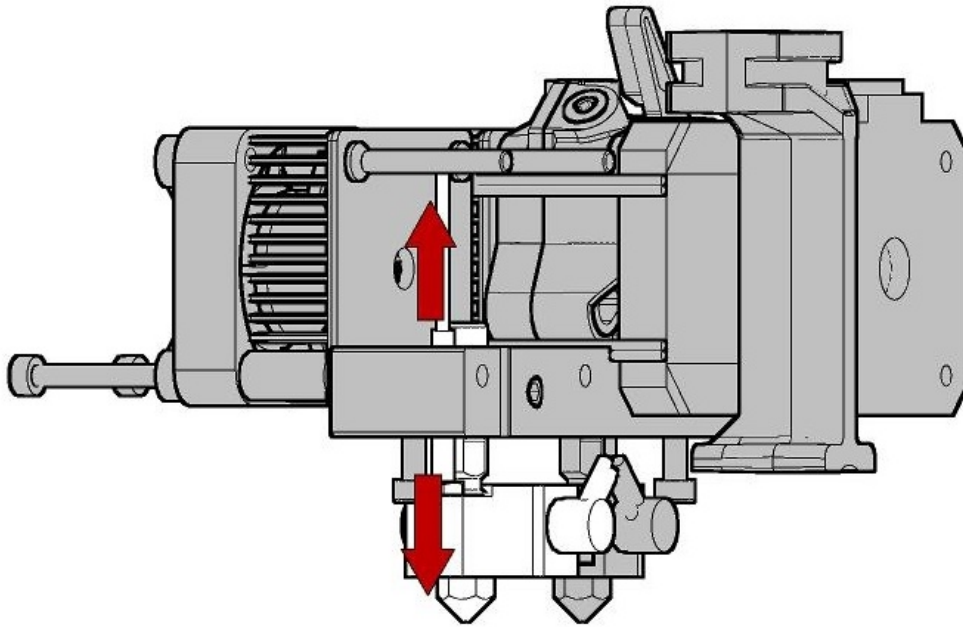
can use any card or piece of paper. You should feel some drag from the lower nozzle, but be able to slide the card around underneath it. If that's not the case, manually adjust the platform height by twisting the threaded Z-axis rod.

6. Loosen the bar mount set screw on the side without its motor assembly.



Locate the set screw holding the thermal barrier tube in place. It's at the back of the bar mount. Use the 2.5 mm hex wrench to loosen it. This will loosen the entire hot end -- the the nozzle, thermal core and thermal barrier tube.

7. Check the drag of the leveling card under the loosened hot end.



The loosened hot end should drop down to rest on the leveling card. Slide the leveling card under the nozzles to make sure.

If the hot end does not drop down, use a hex wrench or some other tool to gently press down on the top of the thermal barrier tube.

8. Tighten the bar mount set screw.

When the two nozzles seem to be at the same height, use the 2.5 mm hex wrench to tighten the set screw and secure the loose thermal barrier tube.

9. Check your nozzle heights and adjust if necessary.

Level the plate again, this time paying attention to both nozzles. If they still appear to be at different heights, repeat steps 6. through 8. until the heights match.

10. Return the motor assembly to the extruder.

Put the motor assembly back on the extruder carriage and tighten the fan bolts at the front of the extruder to secure it. Plug the white plastic motor wire connector coming from the extruder cable into the port at the back of the motor.

Your nozzle heights should now look fairly uniform as you move them around on the build plate. We recommend that you go to the Utilities menu and run the Nozzle Calibration Script before returning to printing.